Name: ——————————————   R. Hammack   Score: ————

Directions: Please answer all questions in the space provided. Use of calculators or any form of electronic communication device is strictly forbidden on this quiz.

1. Use any method discussed in class to find $\begin{vmatrix} 2 & -1 & -2 & 5 \\ 3 & 3 & 6 & 1 \\ 0 & 1 & 3 & 0 \\ -2 & 4 & 8 & -2 \end{vmatrix}$.

First do $C_3 - 2C_2 \to C_3$ and then expand along the third column:

$$\begin{vmatrix} 2 & -1 & 0 & 5 \\ 3 & 3 & 0 & 1 \\ 0 & 1 & 1 & 0 \\ -2 & 4 & 0 & -2 \end{vmatrix} = \begin{vmatrix} 2 & -1 & 5 \\ 3 & 3 & 1 \\ -2 & 4 & -2 \end{vmatrix} = \begin{vmatrix} 2 & -1 & 5 \\ 3 & 3 & 1 \\ 0 & 3 & 3 \end{vmatrix} = 2\begin{vmatrix} 3 & 1 \\ 3 & 3 \end{vmatrix} - 3\begin{vmatrix} -1 & 5 \\ 3 & 3 \end{vmatrix} = 2 \cdot 6 + 3 \cdot 18 = \boxed{66}.$$